CONTENTS FOR
FLUID MECHANICS-Soviet Research
Volume 19, Nos. 1-6, 1990
Number 1

1 Improvement of Plants Producing Industrial and Agricultural Commodities by Utilization of Achievements of Mechanics of Inhomogeneous Media
V.V. Struminskiy

14 Theory of Multicomponent Gases and Disperse Media
V.V. Struminskiy

24 Modeling and Optimal Design of Catalytic Cracking Systems with an Upward Pneumatic Transport of Catalyst
R.I. Zeynalov

35 Beneficial Effect of Improved Shape and Orderly Packing of Catalyst Pellets in Tubular Fixed-Bed Phthalic Anhydride and Synthesis Gas Reactors
V.Kh. Matyushenko

46 Some Current Problems in the Kinetic Theory of Gas Mixtures
A.D. Orlov

52 Interaction Between Components and Fluxes of Viscous Momentum and Heat in Disperse Systems
Yu.N. Savchenko

66 Investigation of the Dynamics of Flow in Organized Disperse Systems at Transitional Reynolds Numbers
Yu.I. Boyko, N.Kh. Kopyt, A.I. Struchayev, M.N. Chesnokov, and S.M. Kontush

74 Hydrodynamic Interaction of Particles in Polydisperse Systems
Yu.N. Kul'bitskiy

81 Interaction of Particles in a Viscous Liquid with Boundaries
O.B. Gus'kov

89 Hydrodynamic Problems of the Development of Large-Capacity Biochemical Reactors (Fermenters)
Z.A. Shishkin, A.M. Kuznetsov and V.A. Sabanin

96 Analysis of Nonisothermal Industrial Processes
V.Kh. Matyushenko and B.M. Markeyev

109 Heat and Mass Transfer in Systems with a Phase Interface
L.P. Kholpanov

119 Aeroacoustics and Acoustic Feedback in Supersonic Flow in Industrial Processes
P.P. Deliverov, Ye.A. Kapustin, P.A. Neshcheret, A.V. Ryabukhin, and O.E. Shlikh

CONTENTS FOR
FLUID MECHANICS-Soviet Research
Volume 19, Nos. 1-6, 1990
Number 1

1 Improvement of Plants Producing Industrial and Agricultural Commodities by Utilization of Achievements of Mechanics of Inhomogeneous Media
V.V. Struminskiy

14 Theory of Multicomponent Gases and Disperse Media
V.V. Struminskiy

24 Modeling and Optimal Design of Catalytic Cracking Systems with an Upward Pneumatic Transport of Catalyst
R.I. Zeynalov

35 Beneficial Effect of Improved Shape and Orderly Packing of Catalyst Pellets in Tubular Fixed-Bed Phthalic Anhydride and Synthesis Gas Reactors
V.Kh. Matyushenko

46 Some Current Problems in the Kinetic Theory of Gas Mixtures
A.D. Orlov

52 Interaction Between Components and Fluxes of Viscous Momentum and Heat in Disperse Systems
Yu.N. Savchenko

66 Investigation of the Dynamics of Flow in Organized Disperse Systems at Transitional Reynolds Numbers
Yu.I. Boyko, N.Kh. Kopyt, A.I. Struchayev, M.N. Chesnokov, and S.M. Kontush

74 Hydrodynamic Interaction of Particles in Polydisperse Systems
Yu.N. Kul'bitskiy

81 Interaction of Particles in a Viscous Liquid with Boundaries
O.B. Gus'kov

89 Hydrodynamic Problems of the Development of Large-Capacity Biochemical Reactors (Fermenters)
Z.A. Shishkin, A.M. Kuznetsov and V.A. Sabanin

96 Analysis of Nonisothermal Industrial Processes
V.Kh. Matyushenko and B.M. Markeyev

109 Heat and Mass Transfer in Systems with a Phase Interface
L.P. Kholpanov

119 Aeroacoustics and Acoustic Feedback in Supersonic Flow in Industrial Processes
P.P. Deliverov, Ye.A. Kapustin, P.A. Neshcheret, A.V. Ryabukhin, and O.E. Shlikh

129 Gas Flow in a Diffuser Containing a Fixed Granular Bed
L.N. Sukhova and Yu.N. Savchenko
136 Effect of Flow Input Arrangements on the Uniformity of Velocity Distribution in Fixed-Bed Reactors
V.M. Gremyachkin and M.V. Yablokov

Number 2

1 Structure Identification in Unsteady-State Chemical Kinetics by Derivation of Models
A.G. Pogorelov and I.L. Muskatina
9 Efficacy of Transport of a Dispersed Impurity by Vortex Rings
A.I. Struchayev, N.Kh. Kopyt and Yu.I. Boyko
19 Strong Collisional Interaction Between Charged and Neutral Particles in the Flow of Disperse Systems
V.V. Struminskiy, A.G. Gagarin, V.Kh. Vigdorchik, and S.F. Makarenko
28 Description of Flows of Multicomponent Gas Mixtures and Fine-Particle Disperse Media Strongly Out of Equilibrium
Yu.N. Savchenko
37 A Method of Calculating Physical Adsorption in Gas-Solid Systems
V.M. Pshenichnikov
46 New Mass Transfer Devices: Pulsed-Mixing Reactor for the Production of Cellulose by Oxidative Ammonolysis
Sh.F. Dvoskin, Yu.P. Vorob'yev, L.O. Ioffe, Yu.S. Ivanov, L.K. Lukanina, V.V. Sergeyeva, and Ye.N. Timofeyev
54 Unsteady-State Models of Sorption Processes, as Exemplified by the Desulfurization of Natural Gas
A.G. Pogorelov and O.M. Churmayev
63 Calculation of the Coefficients of Component Interaction in Gas Mixtures
V.Yu. Velikodnyy
69 Kinetic Theory of Gas Mixtures as Applied to the Derivation of a Diffusion Equation with a Finite Perturbation Travel Velocity
A.V. Orlov
75 Eulerian Hydrodynamic Equations for a Multitemperature Plasma
S.F. Makarenko
82 Some Ways of Using Thermal Imaging in Aeromechanics
V.M. Lutovinov, A.A. Poskachey and V.I. Sukharev
92 Geometric Factors Governing the Effect of Roughness on the Properties of the Turbulent Boundary Layer
Yu.I. Mayorov
99 Calculation of the Concentration and Temperature Dependence of the Transport Coefficients of Dense Gas Flows in Systems with Fast Catalytic Processes
B.M. Markeyev, V.Ye. Turkov and Ye.V. Romancheva
112 Acoustic Measurement of the Gas Content (Voids Fraction) of Dispersions of Very Small Gas Bubbles in Liquids
B.V. Boshenyatov and V.V. Popov

118 Correlations of Turbulent Velocity and Temperature Fluctuations for Pipe Flow of Different Fluids (1. Principal Assumptions and Equations and an Experimental Verification)
E.V. Uŝpuras and P.S. Poŝkas
131 A Finite-Difference Technique for Solving the Omega Equation
I.I. Marmershteyn and V.A. Shnaydman

Number 3

1 Effect of Easily Penetrable Roughness on the Hydrodynamics of Laminar Flows
Ye.A. Gayev
13 Interaction of Stabilized Flow with an Easily Penetrable, Particulate Roughness
Ye.A. Gayev and L.M. Sabayeva
22 Effect of Longitudinal Ribs on Skin Friction in Turbulent Flow
G.V. Yenutin, Yu.A. Lashkov, N.V. Samoylova, I.V. Fadeyev and Ye.V. Shumilkina
30 Gas Flow in Strongly Underexpanded Jets
V.N. Gusev, A.I. Omelik and V.V. Pomarzhanskiy
40 Plane Turbulent Surface Jets in Incompressible Fluids
V.P. Prokhod'ko and A.N. Shabrin
49 Performance of a Controlled Gas Ejector
A.A. Ennan, O.N. Tsabiev, A.A. Moskalenko and A.A. Garbuz
54 Results of Testing of Vortex-Controlled Diffusers with Large Divergence (Solid) Angles
Yu.A. Kravtsov
63 The Efficiency of Low-Flow Ponds in Converting Solar Energy into the Kinetic Energy of Free Convection
Ye.I. Nikiforovich
69 Mathematical Modeling of Long Spray-Ponds for Cooling of Recycled Cooling Water of Conventional and Nuclear Power Plants Under Windless Conditions
Ye.A. Gayev, A.I. Denisenko and A.Sh. Asaturyan
76 The Effect of the Nozzle Blade Geometry and Operating Variables on Nonequilibrium Condensation of Steam in Turbines
F.N. Babot and V.P. Polukhin
83 Effect of Gravity on the Efficiency of Precipitation of Droplets in Louvered Separators
L.S. Sterman, V.A. Devyanin and A.V. Rafaelian
93 The Effect of the Air Content of Water on the Development of Cavitation Erosion
R.Kh. Minasyan and V.S. Alekseyev
101 Theoretical Relationship Between Cavitation Erosion of Hydraulic Machinery and the Flow Velocity
R.Kh. Minasyan
111 Impact of a Droplet on a Solid Surface
V.V. Poddubenko and R.M. Yablonik

117 Stability Limits of Axial Gas Bearings
A.G. Luchin and I.Ye. Sipenkov
126 Combined Diagram of Vertical Two-Phase Flow Patterns
Yu.L. Sorokin
137 Heat Transfer in Valves (2. Coefficients of Local Heat Transfer in the Flow-Through Part of a Shutoff Valve)
A.R. Jonaitis, G.B. Zdanavicius and A.A. Zukauskas

Number 4

1 Planing (Skimming) of a Keel-Equipped Plate on Waves
L.D. Kovrizhnykh and A.I. Tikhonov
13 Effect of Roughness on the Transition Reynolds Number
Yu.L. Tonkonogiy, V.N. Buz, A.A. Garbuz and A.I. Kalinchak
20 Structure of Turbulent Boundary Layer in Flow of Air over an Element of a Tube Bundle
R.V. Ulinskas and A.I. Garbaravičius
29 Correlations between Turbulent Velocity and Temperature Fluctuations in Pipe Flows of Various Coolants (2. Effect of Prandtl Number)
E.V. Ušpuras and P.S. Poškas
38 Local Shear Stress on the Wall of a Coiled Tube (3. Fluctuations of Shear Stress)
V.A. Mikaila, P.S. Poškas and J.V. Vilemas
45 Local Shear Stress on the Wall of a Coiled Tube (4. Inlet Region
V.A. Mikaila, P.S. Poškas and J.V. Vilemas
58 Enhancement of Heat Transfer in Gas-Cooled Helical Ducts
V.M. Šimonis, P.S. Poškas and V.P. Šukys
66 Vibrations of Tubes in Bundles in Asymmetric Crossflow
V.I. Katinas, A.I. Tumosa and A.A. Žukauskas
74 An Ejector with High-Pressure Gas Nozzles Distributed Along Its Axis
Ye.G. Zaytsev and G.M. Ryabinkov
83 Coefficients of Eddy Diffusion in Neutrally Stratified Turbulent Flows
V.M. Tsarenko
96 Fluctuating Parameters of the Wind Speed and Temperature in the Surface Layer of the Atmosphere, from Data of the International Turbulence Comparison Experiment (ITCE-81)
W. Gerstmann
104 Anisotropic Fluctuations of Temperature and Wind Speed in the Neutrally Stratified Ground Layer of the Atmosphere
B.A. Kader
115 Model of Convective Atmosphere Boundary Layer and Its Parametrization
D.L. Yordanov and M.P. Kolarova
128 Errors of the Method of Measuring the Heat Flux to Wind-Tunnel Models by Means of Thermal-Indicator Coatings
V.N. Brazhko, N.A. Kovaleva and G.I. Maykapar

Number 5

1 Distributed Generation of Instability Waves by a Long, Narrow Vibrating Section of a Flow-Contacting Wall
S.V. Manuylovich

9 Effect of Turbulence of the Incident Flow on Flow-Induced Vibrations of Tube Bundles Operating in Crossflow
V.I. Katinas, R.V. Bakas, E.E. Perednis and V.A. Svedoscius

18 Aerodynamic Fineness of a Plane Delta Wing with Rounded off Edges at Hypersonic Velocities
P.I. Gorenbukh

24 Evaluation of Separated Flow and Heat Transfer in Viscous Flow Over Blunt Bodies of Various Shapes
P.P. Vaitiekunas

35 Laminar Separated Flow Over a Biconical Body at Hypersonic Velocities
A.P. Kosykh, S.K. Marinichenko, G.G. Nersesov and A.S. Skuratov

45 Turbulent Transport in Helical Ducts (1. Experimental Unit, Procedure and Preliminary Experiments)
P.S. Poškas, B.D. Tešķevičiene and J.-E.J. Adomaitis

55 A Contribution to the Kinetic Theory of Turbulence
V.V. Struminskiy

69 Effect of Initial Discharge Conditions on Aerodynamic and Acoustic Properties of Turbulent Jets
Ye.V. Vlasov, A.S. Ginevskiy and R.K. Karavosov

80 Optimal Control of Flow Turbulence by Means of Screens
G.I. Derbunovich, A.S. Zemskaya, Ye.U. Repik and Yu.P. Sosedko

92 Reduction of Turbulent Friction by Surfactants: Flows of Suspensions and Emulsions
L.I. Sedov, V.N. Pilipenko and V.N. Karashchenko

104 A Semiempirical Theory of Drag Reduction
A.B. Stupin

115 The Microbubble Gas-Liquid Medium
V.V. Struminskiy

120 Three-Dimensional Nature of the Boundary Layer in a Compressed Plane Flow in a Convergent Air Intake
V.V. Zatoloka and A.P. Osovik

129 Hydraulic Evaluation of Plane Gates in Circular Channels
V.N. Kozin

134 Slug Flow of a Gas-Liquid Mixture in a Vertical Pipe
L.N. Maurin

Number 6

1 Strange Attractors and Turbulence
V.V. Struminskiy and B.Yu. Skobelev

13 Equations of Variation of Vorticity Distribution Induced by the Presence of an External Velocity Field and of Solid Boundaries
M.Sh. Shavaliev
20 Phenomenological Description of the Strain-Induced Anisotropy of Steady-State Turbulent Shear Flow of an Incompressible Fluid
V.A. Pavlovskiy
34 Analysis of the Mechanisms of Nonlinear Buildup of Perturbations in Blasius Flows
M.B. Zel'man, V.Ya. Levchenko, I.I. Maslennikova and B.V. Smorodskiy
45 Variational Models of Organized Vortical Motion in Turbulent Flows in the Approximation of Euler and Navier-Stokes Equations
Yu.N. Grigor'yev, V.B. Levinskiy and V.P. Nartov
54 Flow and Heat Transfer in the Cooling-Film Zone Produced by Directional Injection into a Turbulent Boundary Layer
K.M. Dyusenov, V.P. Motulevich and E.D. Sergievskiy
60 Measurement of Microscale Turbulence in Shear Flows
V.R. Kuznetsov, A.A. Praskovskiy and V.A. Sabel'nikov
70 Turbulence Models for Calculating the Drag in the Boundary Layer on Smooth and Rough Walls
A.V. Kolesnikov
79 Turbulent Flows in and Above a Permeable Roughness Layer
Ye.A. Gayev, V.V. Melenevskiy, I.K. Nikitin, V.S. Tsymbal and V.N. Prokhorov
90 Theory of Application of Thermal Imaging in Processes Involving Turbulent Gas Flows
V.M. Lutovinov
97 Development and Interaction of Perturbations in Unstable Chemically Reacting Flow Systems
V.A. Yelyukhin and L.P. Kholpanov
109 Investigation of the Diffusion (Dispersion) of Particles in a Two-Phase Turbulent Jet
T.A. Girshovich and V.A. Leonov
122 Drying and Reduction of Iron Power in a Turbulent Swirled Flow
A.A. Yudakov
128 Interaction between Submerged Turbulent Jets of Dilute Polymeric Solutions and a Baffle
Z.P. Shul'man, N.A. Pokryvaylo, V.V. Kulebyakin, A.V. Karpechenko and V.V. Tovchigrechko
134 Three-Dimensional Effects in the Boundary Layer in Convergent Compressive Flows
V.V. Zatoloka and G.A. Kisel' [Dec.]
142 Contents for 1990